REMARKS

In response to the Official Action mailed June 9, 2008, Applicant respectfully requests reconsideration, reexamination and allowance of claims 1-13 in view of the following remarks.

The Office Action has rejected claims 1-13 under 35 U.S.C. Sections 102(b) and 103(a), the following remarks address these rejections.

Claim 1 is in conformity with the provisions of 35 USC §102(b)

The Office Action has rejected claim 1 under 35 USC § 102(b) as being anticipated by Antoshenkov (US patent 5,379,422). Applicant believes that the technical solution defined by independent claim 1 is different from the technical solution disclosed in Antoshenkov, and thus independent claim 1 is in conformity with the provisions of 35 USC §102(b). Applicant further comments as follows:

Claim 1 of the present invention defines a method for fast locating records on a data page in a database, comprising the steps of:

(1) setting a directory structure composed of a group of record deviations at the end of a data page, in which, a record deviation is a position deviation of a certain record on the data page; each directory in the directory structure is called dir_slot, and each dir_slot stores the position deviation of one record; and

(2) searching for relative records in the dir_slot by adopting a locating algorithm, after locating one certain dir_slot, searching the relative group of records in order according to the record deviation stored in the dir_slot and locating the record to be searched for accuracy, and outputting the deviation of the record.

In contrast, the method disclosed in Antoshenkov discloses a data structure that describes directory files storing information for each node (including root node, child node and leaf node) in a tree. It is respectfully submitted that each and every element of claim 1 of the present invention is not found in Antoshenkov. This is illustrated as follows:

a) The element of "setting a directory structure composed of a group of record deviations at the end of a data page" is not found in Antoshenkov

In Antoshenkov, Figure 7a, shows a root directory. As described in lines 19-36 in column 9 of the description in Antoshenkov, the root directory includes a list of entries including an entry for

for each of the children of the root node, and each entry including the name of the child directory, an indication that the entry is for a directory, the cardinality estimate of the child directory and a pointer to the child directory. The root directory is different from the directory structure set at the end of a data page (corresponding to a leaf node of the tree structure) defined in claim 1 of the present invention, since the directory structure defined in claim 1 of the present invention is set at the end of a data page and composed of a group of record deviations while the directory structure as shown in Figure 7a of Antoshenkov is a root directory which includes the above contents such as a pointer to the child directory.

b) The element of "a record deviation is a position deviation of a certain record on the data page" is not found in Antoshenkov

In Antoshenkov, the directory as shown in Figure 7c (please note that in the Office Action there is a reference in this element to "fig 7b", however, Applicant respectfully notes that according to its understanding the pointer of a file is mentioned as being in Figure 7c in the description of Antoshenkov) includes a directory entry including the name of a file, an indication that the entry is for a file, the size of the file and a pointer to the file, wherein the file pointers specify an absolute physical address where the directory or file resides. The above directory is different from the directory structure defined by claim 1 of the present invention, since the directory structure defined in claim 1 of the present invention is composed of a group of record deviations in which a record deviation is a position deviation of a certain record of all records stored on the data page. In contrast, the directory as shown in Figure 7c in Antoshenkov includes pointers specifying an absolute physical address where the directory or file resides rather than including position deviations.

c) The element of "each directory in the directory structure is called dir_slot, and each dir_slot stores the position deviation of one record" is not found in Antoshenkov

Antoshenkov discloses the root directory structure which stores the pointers of its child directory in lines 19-36, column 9 of the description; the root directory is different from the directory defined in claim 1 of the present invention, since each directory defined in claim 1 of the present application is called "dir_slot", and each dir_slot stores the position deviation of a certain record of all records stored on the data page. In sharp contrast, the root directory stores the pointers

the pointers of the child directory in the data structure provided by Antoshenkov.

d) The element of "searching for relative records in the dir_slot by adopting a locating algorithm" is not found in Antoshenkov.

Lines 47-62 in column 5 and lines 62-63 in column 13 of the description in Antoshenkov discloses that MS-DOS operating system includes commands and program-callable functions for such as searching directories, searching a specified tree index beginning at the root nodes by "SEARCH DIRECTORY" and searching downward along a path specified by a list of keys. This is different from the element "searching for relative records in the dir_slot by adopting a locating algorithm," defined in claim 1 of the present invention, since that searching for relative records in the dir_slot, by adopting a locating algorithm defined in claim 1 of the present invention, is to search in the dir_slot by adopting a locating algorithm in the directory structure set on the data page. In contrast, Antoshenkov searches a specified tree index beginning at the root nodes by "SEARCH DIRECTORY" and searches downward along a path specified by a list of keys.

e) The element of "after locating one certain dir_slot, searching the relative group of records in order according to the record deviation stored in the dir_slot and locating the record to be searched for accuracy, and outputting the deviation of the record" is not found in Antoshenkov.

Line 61 in column 13 to line 15 in column 14 in the description of Antoshenkov discloses that searching a specified tree index beginning at the root nodes and searching downward along a path specified by a list of keys. This is different from the element "after locating one certain dir_slot, searching the relative group of records in order according to the record deviation stored in the dir_slot and locating the record to be searched for accuracy, and outputting the deviation of the record" defined by claim 1 of the present invention. It is different as the method defined by claim 1 of the present invention includes: after locating one certain dir_slot in the directory structure set on the data page, searching the relative group of records in order according to the record deviation stored in the dir_slot and locating the record to be searched for accuracy, outputting the deviation of the record.

Furthermore, as described in lines 40-47 in column 3 of Antoshenkov, Antoshenkov intended to obtain a random sample from a hierarchical data structure by maintaining a cardinality estimate; to select a leaf node at random by descending from the root directory; and to select at each node a child of the node by a random selection weighted by the cardinality estimates of the children nodes. However, the method for fast locating records on a data page in a database defined by claim 1 of the present invention is in order to carry out the fast locating of records on a data page in a database. Thus, it can be seen that the technical problem to be solved by the technical solution defined in claim 1 of the present invention is different from the technical problem to be solved by the technical solution disclosed in Antoshenkov. <u>Since their technical solutions are different and the technical problems to be solved are different, their technical effects are different as well.</u>

It can be seen from the above statements that the technical solution defined by claim 1 of the present invention is different from the technical solution disclosed in Antoshenkov. Each and every element defined in Claim 1 of the present invention is not found in Antoshenkov; therefore, claim 1 is not anticipated by Antoshenkov.

The Office Action has also rejected claims 2-6 and 11-13 under 35 USC§ 103(a) as being unpatentable over Antoshenkov in view of Noven (US Patent No. 5,884,297).

It can be seen from the above analysis that the technical solution defined by claim 1 of the present invention at least has the following distinguishing technical features with respect to Antoshenkov:

a) In claim 1 of the present invention, setting a directory structure composed of a group of record deviations at the end of a data page, wherein the directory structure is different from the root directory as shown in Figure 7a of Antoshenkov.

b) In claim 1 of the present invention, record deviation is a position deviation of one certain record on the data page, which is different from the directory structure as shown in Figure 7c of Antoshenkov. The directory structure as shown in Figure 7c of Antoshenkov includes a directory entry including the name of a file, an indication that the entry is for a file, the size of the file and a pointer to the file and the pointers specify an absolute physical address where the directory or file resides rather than including the position deviations recorded.

c) In claim 1 of the present invention, each directory in the directory structure is called dir_slot and each dir_slot stores the position deviation of one record, which is different from the content indicated in lines 19-36 in column 9 of the description in Antoshenkov. In Antoshenkov, the root directory stores the pointers of the child directory.

d) In the technical scheme defined in clam 1 of the present invention, that searching for relative records in the dir_slot by adopting a locating algorithm is different from "SEARCH DIRECTORY" in Antoshenkov. Antoshenkov disclosed that a MS-DOS operating system includes commands and program-callable functions for searching directories, searching a specified tree index beginning at the root nodes by "SEARCH DIRECTORY" and searching downward along a path specified by a list of keys.

e) In the technical scheme defined in clam 1 of the present invention, the element of "after locating one certain dir_slot, searching the relative group of records in order according to the record deviation stored in the dir_slot and locating the record to be searched for accuracy, and outputting the deviation of the record" is different from "SEARCH DIRECTORY" in Antoshenkov which provides information that searching a specified tree index beginning at the root nodes and searching downward along a path specified by a list of keys.

That is to say, in the present invention, a directory structure is set at the end of a data page in database, wherein the directory structure is composed of a group of record deviations, each of record deviations is a position deviation of a certain record on the data page, locating one certain position deviation in the directory structure by adopting a locating algorithm, and then locating the relative record to be searched for accuracy and outputting the deviation of the record. In the technical solution defined by claim 1 of the present invention, not the position deviation of all records is needed to stored in the directory structure set on a data page, but in the linearity record chain of the data page, the position deviations of one or more records are selected to form the directory structure of the data page; when searching, it is to search the relative record in dir_slot by adopting a fast locating algorithm rather than search the specific record; after locating a certain dir_slot, searching the relative records in order according to the record deviation stored in the dir_slot, as such the record to searched can be located accurately (please see lines 18-28 on page 1 of the initial description for details).

Antoshenkov does not provide a technical teaching of applying the above distinguishing technical features to solve the technical problem to be solved in the present invention. Noven does not provide sufficient teachings to overcome the shortcomings of Antoshenkove.

The above distinguishing technical features do not belong to the common technical means in the art.

Therefore, the technical solution seeking protection in claim 1 of the present invention is not obvious for people skilled in the art. As a result, <u>dependent claims 2-6 and 11-13 are also not obvious.</u>

The Office Action has rejected claims 7-10 under 35 USC §103(a) as being unpatentable over Antoshenkov in view of Schmuck et al. (US Patent No. 5,893,086).

Applicant notes that dependent claims 7-10 directly and indirectly cite independent claim 1. As stated above, independent claim 1 is not anticipated by Antoshenkov and thus dependent claims 7-10, that directly and indirectly cite independent claim 1, are not made obvious by the combination of Antoshenkov and Schmuck et al, which does not provide the necessary teachings to overcome the above noted deficiencies in Antoshenkov.

In summary, it is believed that the present patent application, after the above amendments and observation, has overcome all the defects pointed out by the Office Action. Applicant respectfully requests continued examination and allowance of the pending claims. Applicant has made considerable efforts to respond to the present office action. If there is still a problem that the Examiner believes is not overcome by the above amendments and observation, Applicant respectfully requests that it be given a further opportunity to make amendments and further clarification or explanation or observation.
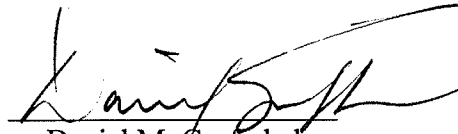
Conclusion

Applicant respectfully request continued examination and allowance of the pending claims. Applicant suggests that the claims are in condition for allowance and respectfully requests an early notice of allowance. Applicant encloses herewith a petition for a one month extension of time to respond as well as authorization to charge deposit account No. 23-0920. Further, if there are any other fees due as a result of this amendment, which have not otherwise been attended too, the

been attended too, the Commissioner is hereby authorized to charge any underpayment, or credit any overpayment, to Deposit Account No. 23-0920. Should any other petitions be necessary, applicant requests that this paper constitute any such necessary petition and that the fee for such petition be charged to the Deposit Account above mentioned.

If the Examiner finds that there are any outstanding issues that may be resolved by a telephone interview, she is invited to contact the undersigned at the below listed number.

Respectfully submitted,

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